REMARKS

The Examiner is thanked for the thorough examination of the present application. The FINAL Office Action, however, has continued to reject all examined claims 39-53. In response to the Office Action, claim 39 is amended. Applicant respectfully requests reconsideration and withdrawal of the rejections for at least the reasons that follow.

Claim Objection

The Office Action objected to claim 39. Applicant has amended claim 39 as suggested by the Examiner. Accordingly, the objection should now be withdrawn.

Rejections 35 U.S.C. 103(a)

Claims 39, 40, and 53 stand rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Chou et al. (US Pat. 2003/0054716) in view of Yamamoto et al. (US Pat. 4,560,737). Applicant respectfully traverses the rejections for at least the reasons discussed below.

None of the prior art references teach or suggest at least the claimed feature of "***an electret coated on the substrate along the porous profile thereof.***"

The Office Action recognizes that "under Section 103, the obviousness of an invention cannot be established by combining the teachings of the prior art references absent some teaching, suggestion, or incentive supporting the combination." "This does not mean that the cited prior art references must specifically suggest making the combination", and "this test requires us to take into account not only the specific teachings of the prior art

reference, but also any inferences which one skilled in the art would reasonably be expected to draw therefrom".

Disclosure of Chou et al.

Chou et al. disclose a method of preparing an electret that includes treating a polymer substrate with a composition, evaporating volatile components of the composition from the treated substrate, and then contacting the treated substrate with water in a manner sufficient to impart an electret charge to the substrate in paragraph [0032]. Chou et al. further disclose the polymer substrate includes films such as porous films in paragraph [0052].

In paragraph [0033], Chou et al. disclose one useful composition for treating the polymer substrate includes a solvent capable of swelling the polymer of the substrate and, ***optionally, a charge additive***. The solvent is selected to be sufficiently soluble in the polymer to swell the polymer, solubilize low molecular weight components of the polymer, and allow the solvent and ***charge additive (when present)*** to ***coat***, penetrate, or a combination thereof, the polymer and/or the polymer substrate. In paragraph [0037], Chou et al. further disclose the ***charge additive*** is soluble in the solvent and preferably ***remains*** with the polymer substrate when the solvent is removed. Chou et al. disclose suitable ***charge additive*** in paragraphs [0038] through [0041]. The listed species of the ***charge additive*** comprise neither of VdF, HFP, CTFE, TFE of the claimed invention.

In paragraph [0062], Chou et al. disclose the treated substrate is contacted with water in a manner sufficient to ***impart an electret charge to the polymer substrate***, which is also referred to as "***hydrocharging***." ***Hydrocharging*** includes impinging jets of

water or a stream of water droplets on the substrate at a pressure sufficient to ***impart an electret charge to the polymer substrate***. The substrate is then dried. As described, the treated substrate of Chou et al. ***becomes an electret after Hydrocharging.***

Moreover, Chou et al. disclose the ***charge additive*** is ***capable of altering*** the charged nature of the electret by improving the ability of a polymer substrate treated therewith to maintain a charge ***after being hydrocharged*** (i.e., increasing the charge stability of a treated electret relative to an untreated electret), ***increasing the amount of charge*** exhibited by a treated substrate ***after hydrocharging*** relative to the untreated substrate, and combinations thereof.

Disclosure of Yamamoto et al.

Yamamoto et al. teach a piezoelectric polymeric material in the form of sheet or film, which comprises polymers of vinylidene fluoride (VDF) as principle components in abstract.

Yamamoto et al. disclose an object thereof is to provide an improved piezoelectric polymeric material in the form of ***sheet*** or ***film***, which exhibits higher moduli of piezoelectricity than the films of poly(vinylidene fluoride) in Col. 1, lines 44-47. The piezoelectric polymeric material is essentially a mixture comprising 100 parts by weight of a vinylidene fluoride base resin and 1-100 parts by weight of a copolymer of a first component which is a fluoroelastomer and a second component at least 50% by weight of which is vinylidene fluoride monomer, and is ***produced by stretching a sheet or film of the aforementioned mixture*** at a temperature below the melting temperature of the mixture and ***polarizing*** the same sheet or film after commencement of the stretching

thereby making the stretched sheet or film ***an electret***. (See Col. 1, lines 48-60 of Yamamoto et al.)

Further, Yamamoto et al. teach the resin composition of the piezoelectric polymeric material is mixed and shaped into the form of sheet or film by either a melting method or a dissolving method between Col. 3, line 65 and Col. 4, line 2.

In the case of a ***melting method***, the copolymer (A) and the vinylidene fluoride base resin are ***mixed and kneaded*** at an adequately elevated temperature ***by means of*** a suitable machine such as ***rolls***, ***kneader*** or ***Bambury mixer*** to obtain a softened resin composition in which the two essential ingredients are uniformly dispersed. The ***kneading temperature*** is made close to a ***higher one of*** the melting temperature of the copolymer (A) and the melting temperature of the vinylidene fluoride base resin. Then the kneaded resin composition is ***shaped into a sheet or a film*** of desired dimensions ***by using*** a suitable plastics shaping machine such as an ***extruder*** having a T-die or an ***inflation die*** or a ***press***. (See Col. 4, lines 3-15 of Yamamoto et al.)

In the case of a ***dissolving method***, the copolymer (A) and the vinylidene fluoride base resin are ***put into a suitable polar solven***t such as dimethylformamide or dimethyl sulfoxide and ***mixed in a dissolved or swelled state*** **by using** a ***stirrer*** to obtain a solution having a suitable viscosity. This solution is ***spread in a mold*** or ***on a substrate*** to ***form a liquid layer*** of a predetermined thickness, and the liquid layer is ***left standing until complete evaporation of the solvent***. Thus a resin composition sheet or film of an intended thickness can be obtained. (See Col.4, lines 16-26 of Yamamoto et al.)

The desirably shaped sheet or film of the resin composition is ***stretched*** to an adequate extent utilizing a conventional ***zone-drawing*** apparatus at a temperature

sufficiently high but lower than the melting temperatures of the ingredients of the resin composition. (See Col.4, lines 27-46 of Yamamoto et al.)

Moreover, Yamamoto et al. teach polarizing the stretched sheet or film to make it an electret that serves as a piezoelectric material utilizing a currently prevailing thermal polarization method or a corona discharge method. (See Col. 5, lines 3-47 of Yamamoto et al.)

No proper Motivation to Combine Yamamoto with Chou

Chou et al. list preferred substrate polymers in paragraph [0053], at least one of which such as polyvinyl chloride is a piezoelectric material. When desiring to improve the piezoelectric property of the electret of Chou et al., one having ordinary skill in the art at the time the invention was made can select a substrate comprising piezoelectric polymers suggested by Chou et al. Yamamoto et al., however, teach the desired to stretch the sheet or film of the copolymer (A) to enhance the piezoelectric modulus. (See Col. 4, lines 60-63). Accordingly, the Chou et al. reference is complete and functional itself, and there would be ***no motivation*** for one of ordinary skill in the art to introduce additional steps of spraying a solution of the copolymer (A) of Yamamoto et al. on the substrate of Chou et al. and stretching the sheet or film of the copolymer (A) to ***increase process complexity***.

In this regard, the MPEP section 2141 states:

> Office policy has consistently been to follow *Graham v. John Deere Co.* in the consideration and determination of obviousness under 35 U.S.C. 103. As quoted above, the four factual inquires enunciated therein as a background for determining obviousness are briefly as follows:
>
> (A) Determining of the scope and contents of the prior art;
>
> (B) Ascertaining the differences between the prior art and the claims in issue;
>
> (C) Resolving the level of ordinary skill in the pertinent art; and

(D) Evaluating evidence of secondary considerations.

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BASIC CONSIDERATIONS WHICH APPLY TO OBVIOUSNESS REJECTIONS

When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

(A) The claimed invention must be considered as a whole;

(B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;

(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention and

(D) Reasonable expectation of success is the standard with which obviousness is determined.

Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

Simply stated, the Office Action has failed to at least (1) ascertain the differences between and prior art and the claims in issue; and (2) resolve the level of ordinary skill in the art. Furthermore, the alleged rationale for combining the two references (i.e., to improve the piezoelectric property of the electret of Chou) embodies clear and improper hindsight rationale. For at least this additional reasons, Applicant submits that the rejections of claims 39, 40, and 53 are improper and should be withdrawn.

Hence, the Applicant submits that the rejection of claims 39, 40, and 53 under 35 U.S.C. 103(a) as being unpatentable over Chou et al. in view of Yamamoto et al. is improper. The Applicant respectfully requests that the rejection of these claims on this ground be withdrawn.

Claims 39-44, 47, 50, 51, and 52 stand rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Yamamoto et al. (US Pat. 4,560,737) in view of Chou et al. (US Pat.

2003/0054716). Applicant respectfully traverses the rejections made by the Examiner for the reasons discussed below.

One having ordinary skill in the art at the time the invention was made ***is not*** motivated to use the unwoven porous substrate of Chou in the invention of Yamamoto. Thus, none of the prior art references teaches or suggests the claimed feature of "***an electret coated on the substrate along the porous profile thereof.***"

The Examiner acknowledges that Yamamoto is silent as to any teaching of a porous substrate. Thus, it is obvious that Yamamoto et al. fail to teach or suggest "***an electret coated on the substrate along the porous profile thereof,***" as expressly recited in claim 1.

The Examiner, however, asserts the piezoelectric sheet or film is formed into an electret. The Examiner further asserts the piezoelectric sheet or film of Yamamoto et al. comprises copolymers of VDF and CTFE, which reads on an electret having a first polymer copolymerizing from monomers having VdF as a first monomer, and HFP, CTFE, TFE, or combinations thereof as a second monomer, as recited in claim 39.

Yamamoto et al. disclose the copolymer (A) and the vinylidene fluoride base resin are ***put into a suitable polar solven***t and ***mixed in a dissolved or swelled state*** **by using** a ***stirrer*** to obtain a solution having a suitable viscosity. This solution is ***spread in a mold*** or ***on a substrate*** to ***form a liquid layer*** of a predetermined thickness, and the liquid layer is ***left standing until complete evaporation of the solvent***. Thus a resin composition sheet or film of an intended thickness can be obtained. (See Col.4, lines 16-26). As described, the substrate of Yamamoto et al. is utilized to carry the ***liquid layer*** of a

predetermined thickness of the copolymer (A) and the vinylidene fluoride base resin and the subsequently formed resin composition sheet or film.

For example, even assuming *(arguendo)* that the substrate of Yamamoto et al. is modified by Chou et al. to be a ***porous*** substrate, it is noted that the solution of the copolymer (A) and the vinylidene fluoride base resin leaks out through the pores of the porous substrate, and it tends to complete a porous sheet or film. Thus, it is difficult to control the thickness of the resin composition sheet or film after evaporating the solvent and a lot of solution is wasted.

Further, Yamamoto et al. teach the resin composition sheet or film is stretched to an extent, desiring that the length of the stretched sheet or film reaches at least 200% of the initial length to enhance the piezoelectric modulus of the final product. (See Col. 4, lines 27-28 and 60-62). Neither Yamamoto et al. nor Chou et al. teaches how the porous substrate benefits the stretching process. When the resulting porous sheet or film is stretched, the porous sheet or film may crack before reaching the desired stretching extent resulting from stress concentration on the pores of the resulting porous sheet or film, negatively affecting the enhancement of the piezoelectric modulus of the final product and the process yield of the resin composition sheet or film. Even the porous sheet or film does not crack, local extent in close proximity of the pores are larger than that of other parts of the porous sheet or film, resulting in uneven piezoelectric modulus of the resin composition sheet or film.

As described, the use of porous substrate is harmful to the invention of Yamamoto et al. One of ordinary skill in the art would not have been motivated to use the porous substrate based on the teachings of Chou et al.

As neither Yamamoto et al. nor Chou et al., when taken alone or in combination, teaches or suggests ***an electret coated on the substrate along the porous profile thereof,*** as defined in claim 39, then claim 39 is allowable over the cited references for at least this reason. Insofar as claims 40-53 depend from claim 39, these claims are also allowable.

If the Examiner believes a teleconference will expedite the examination of this application, the Examiner is invited to contact the undersigned attorney at 770-933-9500.

No fee is believed to be due in connection with this submission. If, however, any fee is deemed to be payable, you are hereby authorized to charge any such fee to deposit account 20-0778.

Respectfully submitted ,

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